
U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

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NICKEL IN OCTOBER 1996

Reported domestic nickel consumption in October, on a daily average basis, was 9% greater than that of September, according to the U.S. Geological Survey. Daily usage by the stainless steel industry was up 21% from the revised September figure of 100 metric tons (t). Consumption of elemental nickel to make nickel-base corrosion resistant alloys also increased, rising 8% to 47 t per day. However, demand for elemental nickel by the brass industry was down significantly. Sales to plating companies averaged 42 t per day, slightly more than in September. Percentages reported in this paragraph may not be verifiable owing to the concealment of company proprietary data. Trade data for October will appear in a subsequent issue.

Mining companies rush to stake claims in southeastern Quebec

In August 1996, a team of geologists employed by the Provincial Government of Quebec encountered two gossans (i.e., oxidized cappings of ferruginous sulfide deposits) while mapping part of the Lac Manitou-Lac Nipisso area. The discovery site was near Lac Volant, a smaller lake east of Lac Nipisso. Lac Volant is about 60 kilometers northeast of the iron ore port of Sept-Îles and lies within the Grenville structural province of the Precambrian Canadian Shield. A hand sample from the first gossan ran 2% nickel (Ni), 2.3% copper (Cu), and 0.12% cobalt (Co). Two samples from the second gossan assayed 2.2% Ni and 1.5% Cu, and 1.4% Ni and 5.9% Cu, respectively. The two gossans are separated by a 40-meter-wide exposure of gabbro that shows significant sulfide mineralization.¹

As soon as officials of the Quebec Government learned of the find, they temporarily withdrew 800 square kilometers of land surrounding the gossans from staking. Government geologists have since staked more than 130 claims for the Crown within the withdrawn parcel. St. Geneviève Resources Ltd. and

Virginia Gold Mines Inc., two companies already exploring in the area, quickly staked more than 1,000 claims around the perimeter of the withdrawn area. Surface samples from a number of these claims showed enrichment of copper, nickel, and cobalt.

On October 9, the Quebec Government lifted its ban, triggering a staking rush along the entire North Shore of the Saint Lawrence estuary. Other companies currently exploring the North Shore include Azimut Exploration, Falconbridge Ltd., Fancamp Resources Ltd., GeoNova Explorations Inc., Inco Ltd., Kennecott Canada Inc., and Vior Mining Exploration Co. Inc.² If the Lac Manitou discovery turns out to be a significant resource of nickel, sulfide concentrates could be shipped relatively easily across the Gulf of St. Lawrence to Inco's proposed smelter at Argentia, Newfoundland. (See *Nickel in September 1996*.) Lac Volant is only about 15 kilometers from the Quebec North Shore and Labrador Railway, which operates between Sept-Îles and the iron mines near Labrador City.

Update on Electric Vehicles

U.S. Government plans to speed up purchases of electric vehicles and other alternative fueled vehicles

On December 13, 1996, the President of the United States signed an executive order designed to encourage the use of electric vehicles and other alternative fueled vehicles (AFV's) in metropolitan areas of the country.³ Executive Order 13031 (Federal Alternative Fueled Vehicle Leadership) requires each Federal agency to immediately develop and implement plans for acquiring alternative fueled vehicles. In fiscal year (FY) 1997, 33% of the general-use vehicles acquired must be AFV's. This percentage increases to 50% in FY 1998, 75% in FY 1999, and 75% for subsequent years. The executive order is designed to (1) reduce U.S. dependence on imported oil, (2) provide an economic stimulus to domestic industry, and (3) improve air

quality in various parts of the country. Some industry analysts expect the order will spur production of nickel-metal hydride, advanced lead, and lithium-ion batteries in the United States.

The Northern Miner, v. 82, No. 28, Sept. 9, 1996, pp. 1-2.

²_____. Lifting Of Ban Prompts Quebec Staking Rush. The Northern Miner, v. 82, No. 33, Oct. 14, 1996, pp. 1-2.

³Federal Register. Presidential Documents. Executive Order 13031 of December 13, 1996: Federal Alternative Fueled Vehicle Leadership. V. 61, No. 243, Dec. 17, 1996, pp. 66529-66531.

¹Brockelbank, T. Quebec Gov't Stakes Nickel As Private Sector Looks On.

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE 1/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
1995:					
October	6,590	1,840	337	8,770	88,100 r/
November	6,040 r/	1,690	634 r/	8,360 r/	96,500 r/
December	6,250	1,860	244	8,360	105,000
January-December	82,600 r/	17,300 r/	4,950	105,000	XX
1996:					
January	6,930	1,500	309	8,740	8,740
February	7,010	1,230	268	8,510	17,200
March	6,760	1,480	318	8,560	25,800
April	6,620	1,490	249	8,360	34,200
May	7,060	1,470	285	8,820	43,000
June	6,710 r/	1,530	236	8,470 r/	51,400
July	6,480 r/	1,160	130	7,770 r/	59,200
August	6,290 r/	1,450	141	7,880 r/	67,100
September	6,030 r/	1,540	178 r/	7,750 r/	74,800 r/
October:					
Steel:					
Stainless and heat resisting	2,090	1,640	W	3,740	31,900
Alloy (excludes stainless)	426	W	W	426	5,900
Superalloys	1,000	--	W	1,000	10,700
Copper-nickel alloys	82	W	--	82	W
Electrical, magnetic, and expansion alloys	W	--	--	W	W
Other nickel & nickel alloys	1,440	--	W	1,440	14,800
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	1,290	--	W	1,290	12,100
Chemical and chemical uses	W	--	W	W	W
Other uses	343	107	320	770	8,300
Total reported	6,670 2/	1,750	320	8,740	83,600
Total all companies (calc) 3/	XX	XX	XX	12,700	122,000
1996: January-October	66,500	14,600	2,430	83,600	XX
1995: January-October	70,300	13,800	4,070	88,100	XX

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category.

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of consumption, 4,920 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

3/ Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (68.69%) to apparent primary consumption for 1994.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS,
BY FORM AND USE 1/ 2/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
1995:				
October	4,900	429	115	5,450
November	5,700 r/	362	115	6,180 r/
December	5,200	635	204	6,030
1996:				
January	4,690	329	106	5,120
February	5,060	292	95	5,450
March	4,610	207	69	4,890
April	4,430	131	81	4,640
May	4,060	342	92	4,500
June	3,630 r/	337	91	4,060 r/
July	3,440 r/	516	70	4,030 r/
August	3,350 r/	429	77	3,860 r/
September	2,910 r/	276	49	3,230 r/
October:				
Steel (stainless, heat resisting and alloy)	823	443	(3/)	1,270
Nonferrous alloys 4/	1,700	(3/)	(3/)	1,700
Foundry (cast irons)	(3/)	--	(3/)	(3/)
Chemical (catalysts, ceramics, plating salts, etc.) and unspecified uses	145	--	80	225
Total	2,680	443	80	3,200

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revision owing to inventory adjustment.

3/ Included in "Chemicals and unspecified uses" category.

4/ Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE 1/

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap
1995:						
October	3,030	650	3,680	3,490	103	3,600
November	4,300	901	5,200	3,240	109	3,350
December	3,970	644	4,620	3,500	103	3,600
January-December	48,800 r/	9,200	58,000 r/	XX	XX	XX
1996:						
January	3,430	760	4,190	3,710	121	3,830
February	3,380	1,120	4,500	4,190	114	4,310
March	4,650 r/	965	5,620 r/	3,970	91	4,060
April	3,900	815	4,710	3,750	90	3,840
May	4,110	783	4,890	3,130	100	3,230
June	3,730 r/	625	4,350 r/	3,080 r/	100	3,180 r/
July	3,700 r/	680	4,380 r/	3,300 r/	97	3,400 r/
August	2,840 r/	1,070	3,910 r/	3,380 r/	98	3,480 r/
September	2,470	1,100	3,570	3,460	109	3,570
October	3,210	762	3,980	2,580	105	3,680
January-October	35,400	8,680	44,100	XX	XX	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

3/ Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of origin	Cathodes, pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1995:										
September	9,060	767	1,880	71	332	271	518	12,900	119,000	33
October	11,200	859	1,470	32	342	211	302	14,400	133,000	33
November	9,200	820	1,440	35	387	261	346	12,500	146,000	34
December	8,930	563	830	25	308	239	210	11,100	157,000	77
January-December	118,000	9,510	16,700	530	4,740	3,190	4,210	157,000	XX	2,310
1996:										
January	11,000	1,030	887	46	333	313	377	14,000	14,000	51
February	9,970	709	1,540	14	309	312	419	13,300	27,200	55
March	9,130	917	2,130	39	385	369	241	13,200	40,400	60
April	11,300	760	980	21	344	313	187	13,900	54,300	52
May	11,000	945	2,020	91	411	319	219	15,000	69,400	72
June	7,750	927	1,430	9	343	289	254	11,000	80,400	43
July	7,230	684	1,470	18	238	274	216	10,100	90,500	42
August	9,250	835	1,120	14	235	319	265	12,000	103,000	44
September:										
Australia	315	--	--	5	--	--	--	320	11,500	--
Brazil	--	--	50	--	--	--	--	50	401	--
Canada	3,370	497	--	14	91	190	33	4,200	42,100	1
Colombia	--	--	90	--	--	--	--	90	868	--
Dominican Republic	--	--	537	--	8	2	--	547	7,150	--
Finland	477	22	--	--	--	1	46	546	2,910	--
France	156	--	--	--	19	--	16	191	1,740	(5/)
Germany	21	1	--	--	18	--	39	79	564	43
Japan	(5/)	15	--	--	26	12	13	66	661	6
New Caledonia	--	--	150	--	--	--	--	150	3,390	--
Norway	2,300	--	--	--	--	--	--	2,300	19,300	--
Russia	2,620	35	--	--	64	--	--	2,720	16,500	--
South Africa	100	--	1	--	--	--	--	101	767	--
United Kingdom	--	33	--	--	89	--	32	154	1,190	1
Zimbabwe	20	--	--	--	--	--	--	20	1,380	--
Other	--	26	55	14	101	116	55	367	4,030	1
Total	9,390	629	884	33	416	322	234	11,900	114,000	52
1996: January-September	86,000	7,430	12,400	284	3,020	2,830	2,410	114,000	XX	471
1995: January-September	88,600	7,270	13,000	438	3,700	2,480	3,350	119,000	XX	2,170

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of destination	Cathodes, pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1995:										
September	46	69	77	240	1,090	2,240	185	3,950	38,500	39
October	44	239	3	297	1,830	2,410	289	5,110	43,600	51
November	38	72	235	196	1,270	2,370	117	4,300	47,900	18
December	21	74	294	471	827	1,800	164	3,650	51,500	147
January-December	1,310	1,230	807	3,500	14,200	27,600	2,920	51,500	XX	475
1996:										
January	7	69	429	262	714	1,570	158	3,210	3,210	22
February	72	53	60	78	903	1,430	305	2,900	6,110	23
March	80	92	181	271	859	1,140	261	2,880	8,990	52
April	149	63	119	134	965	2,760	389	4,570	13,600	27
May	82	171	220	331	782	1,520	519	3,620	17,200	31
June	79	142	73	616	800	1,530	295	3,530	20,700	19
July	7	50	650	480	778	2,650	364	4,980	25,700	30
August	44	97	299	348	703	2,200	424	4,120	29,800	64
September:										
Australia	--	--	--	--	19	--	5	24	86	(5/)
Belgium	--	10	--	--	--	--	--	10	248	--
Canada	--	37	--	359	884	413	48	1,740	12,100	3
Germany	(5/)	4	--	--	48	1	3	56	591	--
India	--	1	176	--	10	--	9	196	1,130	3
Italy	--	(5/)	--	--	--	--	8	8	23	--
Japan	--	6	--	--	54	122	18	200	2,700	(5/)
Korea, Republic of	(5/)	1	--	--	--	245	6	252	3,380	--
Mexico	4	5	--	--	--	--	11	20	329	12
Netherlands	--	--	--	--	25	6	--	31	241	(5/)
Spain	--	--	--	--	--	767	2	769	4,490	--
Sweden	--	2	--	--	142	289	--	433	2,050	--
Taiwan	--	6	3	--	--	271	12	292	3,890	(5/)
United Kingdom	--	2	--	--	--	10	--	12	261	5
Other	2	6	--	(5/)	30	108	170	316	2,710	4
Total	6	80	179	359	1,210	2,230	292	4,360	34,200	27
1996: January-September	526	819	2,210	2,880	7,720	17,000	3,010	34,200	XX	296
1995: January-September	1,210	841	275	2,530	10,200	21,000	2,350	38,500	XX	259

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date 2/
1995:									
September	113	66	109	90	(3/)	86	23	488	7,190
October	340	46	89	107	(3/)	93	44	717	7,900
November	179	61	169	112	(3/)	39	43	603	8,510
December	79	183	158	130	3	49	29	632	9,140
January-December	3,000	1,180	2,030	1,510	3	1,040	378	9,140	XX
1996:									
January	114	212	154	116	(3/)	98	43	738	738
February	259	152	75	92	(3/)	65	61	704	1,440
March	300	176	151	123	(3/)	107	58	916	2,360
April	561	180	158	132	(3/)	95	20	1,150	3,500
May	178	249	175	170	(3/)	67	18	858	4,360
June	221	242	116	157	(3/)	71	54	861	5,220
July	188	117	195	90	(3/)	44	107	743	5,960
August	91	219	97	187	(3/)	49	615	1,260	7,220
September:									
Australia	83	--	--	--	--	--	(3/)	83	798
Belgium	6	--	--	1	--	--	--	7	115
Brazil	--	--	--	--	--	--	--	--	10
Canada	--	4	11	(3/)	--	5	2	22	254
France	--	12	64	--	--	(3/)	(3/)	76	929
Germany	1	48	38	127	(3/)	8	1	223	2,150
Italy	--	--	--	--	--	1	--	1	519
Japan	11	--	2	--	--	13	2	28	229
Mexico	(3/)	--	--	--	--	--	(3/)	(3/)	57
Netherlands	--	--	(3/)	--	--	--	6	6	92
South Africa	16	--	--	--	--	--	--	16	603
Sweden	--	--	27	4	--	14	--	45	434
United Kingdom	--	7	1	(3/)	(3/)	9	14	30	1,200
Other	--	(3/)	1	--	(3/)	--	34	35	406
Total	117	70	144	133	(3/)	50	59	573	7,800
1996: January-September	2,030	1,620	1,260	1,200	1	646	1,030	7,800	XX
1995: January-September	2,400	892	1,610	1,160	1	862	262	7,190	XX

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total 2/	Total year to date 2/
1995:									
September	202	169	173	435	20	98	135	1,230	13,400
October	295	251	105	456	17	65	248	1,440	14,900
November	325	244	124	696	8	63	472	1,930	16,800
December	456	390	173	754	8	117	146	2,040	18,900
January-December	4,170	3,410	1,510	6,230	153	1,240	2,150	18,900	XX
1996:									
January	447	268	59	685	6	118	391	1,970	1,970
February	529	330	70	613	15	205	291	2,050	4,030
March	331	308	121	631	20	100	170	1,680	5,710
April	651	337	138	441	43	149	648	2,410	8,120
May	508	219	149	792	7	89	242	2,010	10,100
June	531	270	155	676	60	81	168	1,940	12,100
July	335	349	148	628	8	84	451	2,000	14,100
August	540	184	176	619	5	96	183	1,800	15,900
September:									
Australia	--	(3/)	10	43	--	--	1	54	932
Belgium	--	--	--	2	--	(3/)	--	2	183
Canada	159	31	57	74	4	34	28	387	3,240
France	34	36	1	2	2	(3/)	10	85	1,800
Germany	3	5	1	15	--	--	2	26	500
India	--	1	--	--	--	--	(3/)	1	64
Ireland	--	--	29	1	--	--	(3/)	30	223
Italy	(3/)	--	1	96	--	4	(3/)	101	896
Japan	1	12	5	89	--	2	5	114	2,210
Korea, Republic of	1	(3/)	1	2	2	(3/)	7	13	247
Mexico	44	2	8	1	1	3	2	61	994
Netherlands	8	1	17	4	--	--	--	30	316
Singapore	--	3	3	(3/)	--	--	7	13	124
Spain	--	1	--	7	--	(3/)	--	8	125
Sweden	--	(3/)	--	2	--	(3/)	(3/)	2	108
Switzerland	1	(3/)	(3/)	10	--	(3/)	1	12	177
Taiwan	(3/)	2	1	1	--	3	40	47	174
United Kingdom	15	80	28	242	(3/)	4	1	370	2,870
Other	8	3	4	30	1	27	72	145	2,190
Total	274	177	166	622	9	78	176	1,500	17,400
1996: January-September	4,150	2,440	1,180	5,710	174	999	2,720	17,400	XX
1995: January-September	3,090	2,520	1,110	4,320	119	999	1,280	13,400	XX

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
October 1996:		
Stainless and heat resisting steels	100	(1/)
Alloy steels	99	1
Superalloys	70	30
Copper-nickel alloys	93	7
Other nickel-base alloys	100	(1/)

1/ Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Cathode NY Dealer \$/lb.	LME Cash \$/t	LME Cash \$/lb.	18/8 Stainless steel scrap Pittsburgh \$/long ton(gw)
1996:				
Average for month of:				
September	3.397	7,318.048	3.319	760
October	3.288	7,031.391	3.189	763
November	3.226	6,943.381	3.149	737
For week ending:				
September 6	3.42-3.48	7,373.200	3.344	740-765
September 13	3.41-3.50	7,492.300	3.398	750-775
September 20	3.40-3.45	7,300.500	3.311	750-775
September 27	3.37-3.43	7,158.300	3.247	750-775
October 4	3.26-3.40	6,974.300	3.163	750-775
October 11	3.26-3.30	6,989.500	3.170	750-775
October 18	3.33-3.36	6,992.600	3.172	750-775
October 25	3.27-3.33	7,029.000	3.188	750-775
November 1	3.33-3.38	7,192.000	3.262	725-750
November 8	3.27-3.33	7,049.000	3.197	725-750
November 15	3.31-3.34	7,074.200	3.209	725-750
November 22	3.13-3.20	6,744.000	3.059	725-750
November 29	3.18-3.25	6,873.500	3.118	725-750

Sources: Platt's Metals Week and American Metal Market.